

ABSTRACT OF THE DISCLOSURE

A process for making closed-cell, alkenyl aromatic polymer foams using nano-particle nucleation agents to control the cell morphology of the resulting foam includes forming a polymer melt at a temperature above the polymer glass transition temperature (for crystal polymers) or the polymer melt point (for amorphous polymers); incorporating selected nano-particles into the polymer melt; incorporating blowing agents into the polymer melt at an elevated pressure; optionally incorporating other additives, such as flame retardants, into the polymer melt; and extruding the polymer melt under conditions sufficient to produce a foam product having a desired cell morphology, characterized by parameters such as reduced average cell size range and/or increased asymmetry of the cells.